

Gate: Thursday, 02/04/2009 1:27:13 PM
 User: Julie Dawson

Process Sheet

| | |
|---|--|
| Customer : CU-DAR001 Dart Helicopters Services | Drawing Name : 212/205 HIGH FED X-TUBE ASSEMBLY |
| Job Number : 46868 | |
| Estimate Number : 13216 | |
| P.O. Number : | Part Number : D212664101TRN |
| This Issue : 02/04/2009 S.O. No. : | Drawing Number : D212-664-141 REV C |
| Prsht Rev. : NC | Project Number : N/A |
| First Issue : / / Type : CROSSTUBES | Drawing Revision : C |
| Previous Run : 46777 | Material : |
| Written By : | Due Date : 09/04/2009 Qty: 1 Um: Each |
| Checked & Approved By : <u>JUD 09.04.02</u> | |
| Comment : Est Rev:A 08-03-06 new issue DD verified by:ec Est Rev B 08.04.02 removed Polish EC verified by: DD | |

Additional Product

Job Number:



| | | |
|----------------|------------------------------|----------------------|
| Seq. #: | Machine Or Operation: | Description : |
|----------------|------------------------------|----------------------|

| | | |
|-----|----------|--------------------|
| 1.0 | D6005128 | Crosstube Material |
|-----|----------|--------------------|



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

| | | | |
|-----|-------------|-------------|---------|
| Qty | Part number | Description | Batch |
| 1 | D6005-128 | Crosstube | B 38339 |

Check OD = 2.750"; ID = 2.000"

Q.M 09.04.02 ①

| | | |
|-----|------------|----------------------------|
| 2.0 | MORI SEIKI | MORI SEIKI CNC LATHE LARGE |
|-----|------------|----------------------------|

**Comment:** MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA113

2-Turn first side as per Folio FA113

3-File down transition lines smooth.

Q.M 09.04.02 ①

| | | |
|-----|-----|------------------------------|
| 3.0 | QC1 | INSPECT ALL DIM TO DIM SHEET |
|-----|-----|------------------------------|

**Comment:** INSPECT ALL DIM TO DIM SHEET

Q.M 09.04.02 ①

| | | |
|-----|------------|----------------------------|
| 4.0 | MORI SEIKI | MORI SEIKI CNC LATHE LARGE |
|-----|------------|----------------------------|

**Comment:** MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA113

2-File down transition lines smooth.

3-Remove sand and plugs

Q.M 09.04.02 ①

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

Date: Thursday, 02/04/2009 1:27:13 PM
User: Julie Dawson

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH FED X-TUBE ASSEMBLY

Job Number: 46868

Part Number: D212664101TRN

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

A.M 09.04.02 ①

6.0

QC8

SECOND CHECK



Comment: SECOND CHECK

AWM 9-4-6 ①

7.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

A.M 09.04.06 ①

8.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

DD 9-4-6

9.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock in kanban rack

Location: V- tube cell

MD 09.04.06 ①

10.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

09/04/08 ②

Job Completion



U 9/04/07

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

NOTE: Date & initial all entries

| | |
|---|----------------------------------|
| DART AEROSPACE LTD | Work Order: 46868 |
| Description: Crosstube Assembly (205/212/412 High Fwd) | Part Number: D212-664-141 |
| Inspection Dwg: D212-664-141 Rev: C | Page 1 of 1 |

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

| Inspection Sheet Drawing Dimension | Tolerance | Actual Dimension | Accept | Reject | Method of Inspection | Comments |
|---------------------------------------|-----------|---------------------|---------|--------|-------------------------|----------|
| SIDE A | 0.200 | +/-0.010 | 0.200 | ✓ | | |
| | R0.063 | +/-0.010 | R0.063 | ✓ | | |
| | 2.740 | +0.005/-0.000 | 2.742 | ✓ | | |
| | 5.097 | +/-0.030 | 5.107 | ✓ | | |
| | 2.304 | +0.005/-0.000 | 2.309 | ✓ | | |
| | 2.340 | +0.005/-0.000 | 2.345 | ✓ | | |
| | 2.398 | +0.005/-0.000 | 2.403 | ✓ | | |
| | 2.448 | +0.005/-0.000 | 2.451 | ✓ | | |
| | 2.498 | +0.005/-0.000 | 2.499 | ✓ | | |
| | 2.549 | +0.005/-0.000 | 2.554 | ✓ | | |
| | 2.599 | +0.005/-0.000 | 2.603 | ✓ | | |
| | 2.671 | +0.005/-0.000 | 2.673 | ✓ | | |
| | 2.701 | +0.005/-0.000 | 2.701 | ✓ | | |
| | | | | | | |
| SIDE B | 0.200 | +/-0.010 | 0.200 | ✓ | | |
| | R0.063 | +/-0.010 | R0.063 | ✓ | | |
| | 2.740 | +0.005/-0.000 | 2.743 | ✓ | | |
| | 5.097 | +/-0.030 | 5.107 | ✓ | | |
| | 2.304 | +0.005/-0.000 | 2.309 | ✓ | | |
| | 2.340 | +0.005/-0.000 | 2.345 | ✓ | | |
| | 2.398 | +0.005/-0.000 | 2.403 | ✓ | | |
| | 2.448 | +0.005/-0.000 | 2.453 | ✓ | | |
| | 2.498 | +0.005/-0.000 | 2.503 | ✓ | | |
| | 2.549 | +0.005/-0.000 | 2.554 | ✓ | | |
| | 2.599 | +0.005/-0.000 | 2.603 | ✓ | | |
| | 2.671 | +0.005/-0.000 | 2.673 | ✓ | | |
| | 2.701 | +0.005/-0.000 | 2.703 | ✓ | | |
| | 126.51 | +/-0.020 | 126.510 | ✓ | | |
| | | | | | | |

| | | | |
|--------------------------|------------------------|----------------------------|-----|
| Measured by: A.M. | Audited by: PLM | Prototype Approval: | N/A |
| Date: 09.04.03 | Date: 9-4-6 | Date: | N/A |

| Rev | Date | Change | Revised by | Approved |
|-----|----------|--|------------|----------|
| A | 05.04.27 | New Issue (P/O D412-664-101) | KJ/JLM | |
| B | 06.03.15 | Tolerance revised for 5.097 per Dwg Rev update | KJ/JLM | |
| C | 07.05.28 | Dwg Rev updated | KJ/JLM | |

DART**RELEASED**

07.04.24

| | | | |
|----------------------|--------------------------------|---|------------------------|
| DESIGN PH | DRAWN BY PH | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| CHECKED QP | APPROVED [Signature] | DRAWING NO. D212-664-141 | REV. C SHEET 1 OF 3 |
| DATE 07.03.08 | | TITLE XTUBE ASS'Y (205/212/412 HI FWD) NTS | |
| A | 00.12.12 | NEW ISSUE | |
| B | 05.02.04 | ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES | |
| C | 07.03.08 | REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS | |

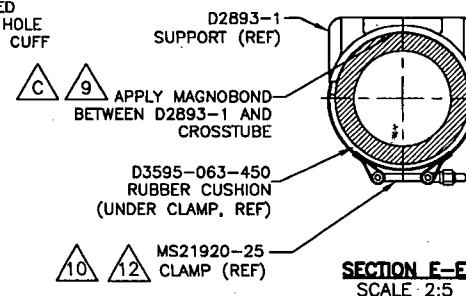
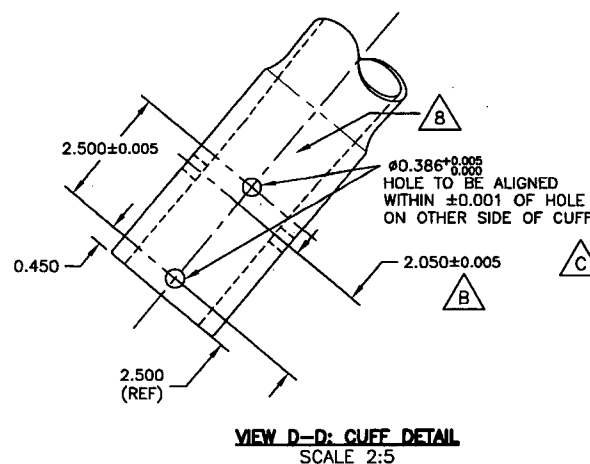
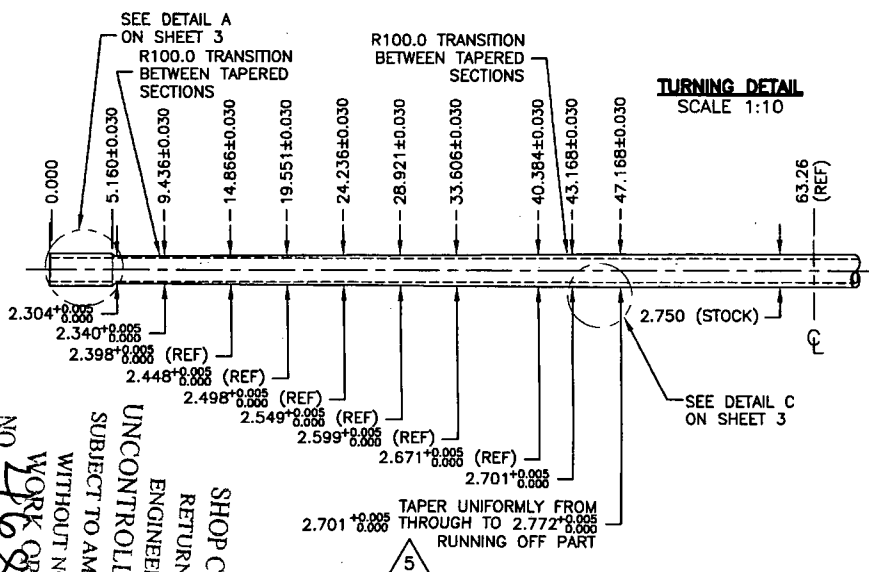
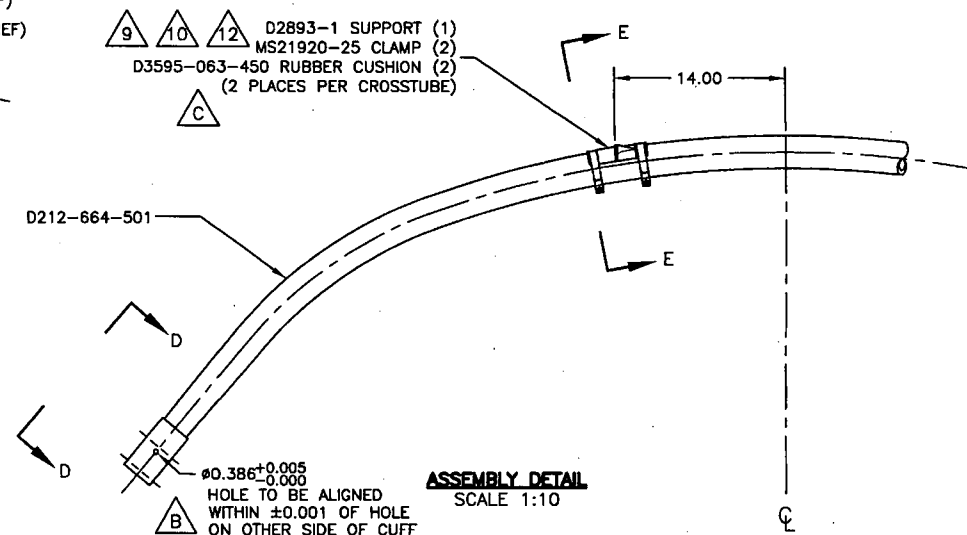
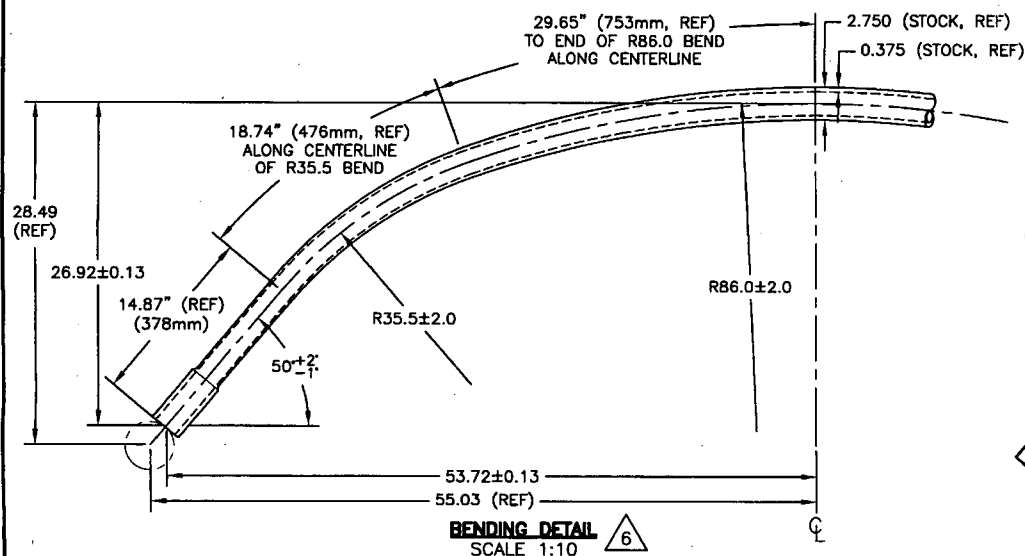
| Qty | Part Number | Description |
|-----|----------------|---|
| X | D212-664-141 | CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD) |
| 1 | D6005-128 | CROSSTUBE |
| 2 | D2893-1 | SUPPORT |
| 4 | D3595-063-450 | RUBBER CUSHION |
| 4 | MS21920-25 | CLAMP (OR MS21920-26) |
| A/R | MAGNOBOND 6398 | ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE) |

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6005-128
FINISHED LENGTH = 126.51 ± 0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 10) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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07.04.24

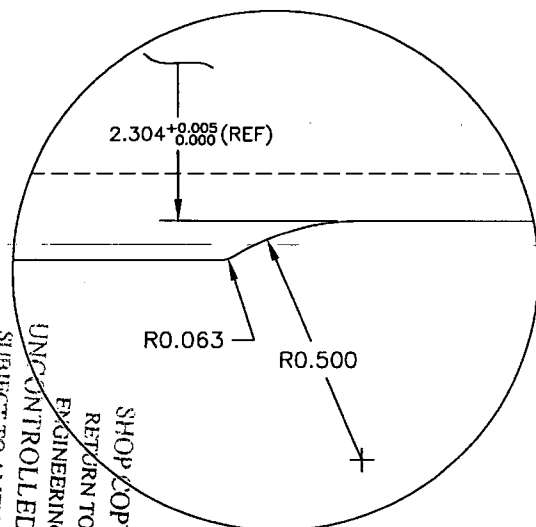
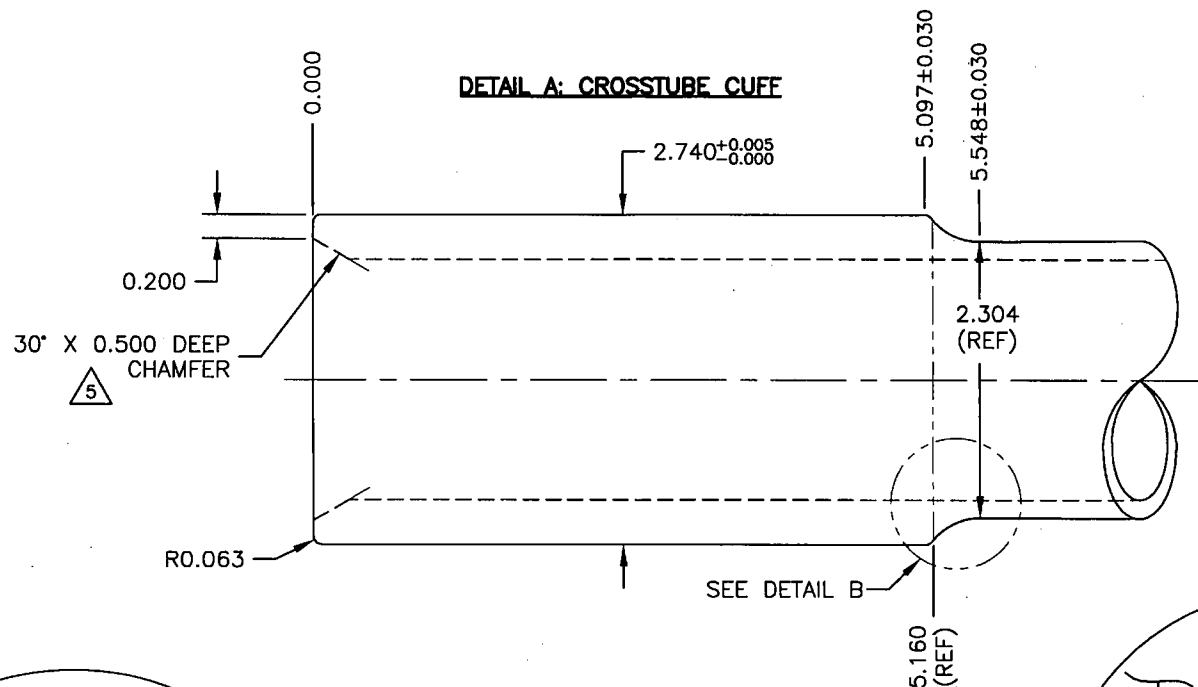
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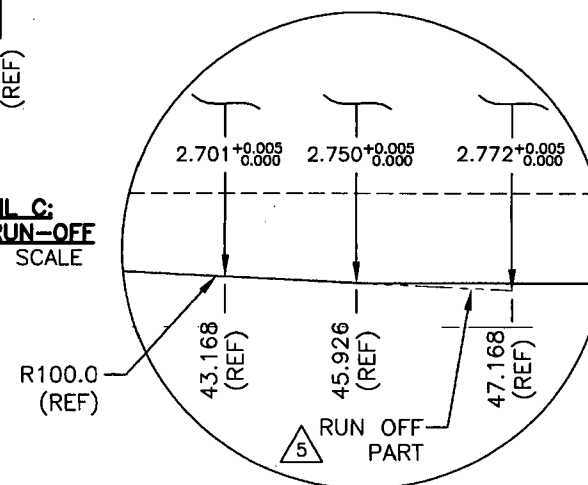
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| | | | | | |
|---------|----------|----------|----------------------------------|-------------|---|
| DESIGN | PH | DRAWN BY | PH | DART | DART AEROSPACE LTD. WILLOWBURRY, ONTARIO, CANADA |
| CHECKED | 9P | APPROVED | 4 | DRAWING NO. | REV. C |
| DATE | 07.03.08 | TITLE | XTUBE ASS'Y (205/212/412 HI FWD) | 1:10 | SHEET 2 OF 3 |

RELEASED
67.04.24 (P)
PER ELEN 883



**DETAIL C:
TAPER RUN-OFF**
NOT TO SCALE



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| | | | |
|------------------|----------------|---|--|
| DESIGN PH | DRAWN BY PH | DART | DART AEROSPACE LTD. WILKESBURY, ONTARIO, CANADA |
| CHECKED J | APPROVED J | DRAWING NO. D212-664-141 | REV. C SHEET 3 OF 3 |
| DATE 07.03.08 | | TITLE XTUBE ASS'Y (205/212/412 HI FWD) | SCALE 1:1 |